Journal of Superconductivity and Novel Magnetism 2002 vol.15 N5, pages 389-392

Microscopic scenario for x = 1/8 anomaly in La2-xSr xCuO4

Larionov I., Eremin M.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We adopt a t1-t2-t3-J-G model for explanation of x = 1/8 anomaly in La2-xSrxCuO4 family compound. The calculated charge susceptibility shows a maximum near Q = (π, π) at intermediate temperatures and near (π, π/2) as temperature approaches zero, in agreement with neutron scattering experiments. Coulomb repulsion G between the first neighbors turns out to be the source of Charge Density Waves (CDW) in narrow band t1 eff, t 2 eff,t3 eff < G. For physically realistic hopping values we obtain the CDW amplitude eQ = x. The in-phase domain structure as a candidate for "stripe" picture is proposed. © 2002 Plenum Publishing Corporation.

Keywords

Charge density waves, La2-xSrxCuO4, x = 1/8 anomaly